



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

M/037/088

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Governor

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Executive Director

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January 7, 1997

TO: Board of Oil, Gas and Mining

THRU: Mary Ann Wright, Associate Director *MAW*

THRU: D. Wayne Hedberg, Permit Supervisor *DWH*

FROM: Anthony A. Gallegos, Senior Reclamation Specialist *aaG*

RE: Request for Board Approval, Proposed Amount and Form of Reclamation Surety, Summo USA Corporation (Summo), Lisbon Valley Copper Project, M/037/088, San Juan County, Utah

At the request of the operator, the Division seeks the Board's conditional approval of the amount and form of reclamation surety proposed by Summo for the Lisbon Valley Copper Project, located in San Juan County, Utah. The form of surety is a surety bond with Robert C. Bates, Inc. The \$1,863,967.50 amount of surety proposed by Summo represents 30% of the surety amount estimated for the entire 10-year life of mine disturbance. This dollar amount includes escalation to year 2002 dollars. Summo proposes to limit operations to 30% of the total disturbed area (314.4 acres) for the first three years of mining operations. The total surety estimated for the entire project disturbance of 1,048 acres is \$6,213,225 (2002-\$).

If the Board approves of this proposed form and amount of surety, Summo's project will have a "permit area" of 1,048 acres and a "bonded area" of 314.4 acres. Under this proposal Summo will not be allowed to disturb more than 314.4 acres until the surety amount is increased appropriately or impacted areas are successfully reclaimed. The Division will re-evaluate the surety estimate in three years (year 2000) and update the bond accordingly at that time.

Summo is not posting the actual surety at this time because the BLM's Record Of Decision (ROD) for this project has not been issued yet. The ROD is anticipated to be issued during the first quarter of 1997. In addition to this surety, Summo will be required to post a separate \$25,000 surety with SITLA for rental and royalty associated with their State Leases to be mined.



Page 2
Memo to Board
M/037/088
January 7, 1997

Attached for your review are copies of the following documents:

1. Summary checklist
2. Executive summary
3. Location map
4. Reclamation surety estimate
5. Reclamation Contract (Form MR-RC)
6. Surety Bond (Attachment B - MR-6)

Thank you for your time and consideration of this request.

jb
Attachments
M037088.brd

DOGM MINERALS PROGRAM

Checklist for Board Approval of FORM AND AMOUNT OF SURETY

Prepared January 9, 1997

Company Name: Summo USA Corporation
Mine Name: Lisbon Valley Copper Project
File No.: M/037/088

Items	Provided		Remarks
	Yes	No	
Executive Summary	X		
Location Map	X		
Reclamation Bond Estimate	X		Operator proposes posting 30% of total life of mine surety initially (first 3 years)
Signed Reclamation Contract	X		
Signed Power of Attorney/ Affidavit of Qualification		X	
Bond/Reclamation Surety		X	Surety to be provided after BLM Record of Decision
Surety Sign Off (Other State/Federal Agencies)		X	Joint surety bond form
RDCC contacted	X		

M037088.ckl

EXECUTIVE SUMMARY

Prepared January 6, 1997

Mine Name: Lisbon Valley Copper Project I.D. No.: M/037/088 (BLM UTU-72499)
Operator: Summo USA Corporation County: San Juan
P.O. Box 847 New/Existing: New
Moab, Utah 84532 Mineral Ownership: private(fee),BLM,State
Surface Ownership: private(fee),BLM,State

Telephone: (801) 259-3077 Lease No.(s): ML-17661, ML-20569
Contact Person: Robert Prescott Permit Term: Life of Mine

Life of Mine: 10 years

Legal Description: All or parts of the following: sections 22, 23, 24, 25, 26, 27, 34, 35, 36, T30S, R25E; section 1, T31S, R25E; sections 30, 31, T30S, R26E.

Mineral(s) to be Mined: Copper

Acres to be Disturbed: Life of Mine total area is 1,048 acres (519 acres on federal land, 273 acres on state land, and 256 acres on fee land).

Present Land Use: Mining, ranching, wildlife habitat

Postmining Land Use: Mining, wildlife habitat

Variances from Reclamation Standards (Rule R647) Granted: R647-4-111.7 - Highwalls -four pits will remain open and unreclaimed with highwall angles steeper than 45 degrees. R647-4-111.7 - Dams and Impoundments - four open pits will remain which may impound meteoric waters. R647-4-111.13 - Revegetation - four open pits will not receive revegetation treatments (with the exception of haul roads which access the pit bottoms) and will not be required to meet the 70 percent of pre-existing ground cover requirement.R647-4-111.13 - Revegetation- the powerline corridor will be reclaimed concurrently with installation and therefore it was not included in reclamation bonding. In addition, the powerline will remain after final reclamation to provide public access.

Soils and Geology

Soil Description: The majority of the disturbance would occur in the Barnum, Cahona, and Rock Outcrop-Rizno complex soil series. Most of the Centennial pit lays within the Dumps-Pits complex soils series which was disturbed during previous mining activities and never reclaimed.

pH: 7.9 to 9.0

Special Handling Problems: A minor amount of mine waste from previous unrelated uranium mining in the immediate vicinity of the GTO pit will be removed from the pit area and placed in a waste dump. Approximately 10 percent of the total amount of mine waste rock is considered potentially acid generating. This potentially acid generating material is associated with the coal bearing rock units and is visibly distinguishable from the other waste materials. This potentially acid generating material will be selectively placed in the central portions of the waste dumps to isolate the material and provide a maximum amount of surrounding non-acid generating waste material.

Geology Description: The structure of the project area is dominated by two features: the southeast end of the Lisbon Valley Anticline and the Lisbon Valley fault zone. Rocks exposed at the surface within and surrounding the Lisbon Valley range in age from the Pennsylvanian, represented by the Hermosa Formation, through the Quaternary. Sedimentary rocks exposed in Lisbon Valley consist mainly of fluvial sandstones and claystones. These rocks are interbedded with limestones and conglomerates that were deposited during the Cretaceous Era. Ore deposits in the project area are generally tabular in shape, parallel the sedimentary bedding planes and are elongated along the axis of the Lisbon Valley Fault. The Lower Cretaceous Burro Canyon Formation underlies the Dakota Sandstone of the Upper Cretaceous Age. The copper ore to be mined occurs in rocks of the Dakota Sandstone and underlying Burro Canyon Formation. The Burro Canyon Formation consists of brown and grey, commonly silicified sandstone and conglomerate overlain by interbedded limestone and mudstone. The Dakota Sandstone consists of yellow and brown, predominantly medium-grained sandstone with some conglomerate. Copper ore mineralization in these formations predominantly consists of the copper oxides, azurite, and malachite, with copper sulfide minerals (mostly chalcocite). Ore minerals are found coating sand grains, filling fractures, and as intergrain matrix. Interbeds of coal and carbonaceous mudstone are present in the Dakota Sandstone.

Hydrology

Ground Water Description: Water bearing units in the study area are part of the Mesozoic Aquifer. Regional groundwater flow directions in this aquifer unit are generally towards the west, and it is recharged from the east. Recharge to the aquifers from precipitation is very limited in extent. Groundwater is known to exist in three water bearing units beneath the project site. The shallow aquifer extends to approximately 400 feet below ground surface and is comprised of the Burro Canyon Formation and Brushy Basin Member of the Morrison Formation. This zone of relatively high hydraulic conductivity rocks is dry in some portions of the valley. Groundwater flow in this unit is highly segmented, with faults appearing to act as barriers to groundwater flow across the faults. An alluvial aquifer of limited extent exists in the valley fill sediments near the Sentinel Pits. A deeper aquifer at the site is located at depths of 900 feet below ground surface or greater in the Centennial Pit area and has been sampled and tested. Initial sampling shows this aquifer has similar characteristics to the regional aquifer. This aquifer is of more regional extent and consists of the Entrada and Navajo Sandstones. Groundwater is also locally perched on clay and shale layers at the shallower depths within the project area. Groundwater in the valley fill exceeded Utah primary or secondary standards for aluminum, manganese and lead. Groundwater in the Burro Canyon Member in the Centennial Pit area exceeded Utah primary or secondary standards for aluminum, cadmium, iron, manganese, zinc, sulfate and TDS. Groundwater in the Burro Canyon Formation in the GTO Pit area exceeded Utah primary or secondary standards for aluminum, antimony, cadmium, iron, lead, manganese, nickel, and thallium. Groundwater in the Mancos Shale exceeded Utah primary or secondary standards for manganese, sulfate, and TDS. Groundwater in the Hermosa Formation exceeded Utah primary or secondary standards for aluminum, antimony, and fluoride. Samples from all of these units exceeded the primary standards for gross alpha and gross beta activities.

Surface Water Description: Surface water flow is ephemeral in the project area. Surface runoff from areas beyond the rim of the valley generally flows away from the valley. Only the valley floor acts as a catchment area for surface water flow. The flow system which exists in the valley is poorly developed. Surface water drainages in the project area are characterized by dry washes typical for this area of Utah. Ephemeral flow occurs only after major precipitation events such as thunderstorms. A surface water drainage divide exists east of the Centennial Pit. The area east of this divide is drained predominantly by an ephemeral stream that

trends to the southeast along the axis of Lower Lisbon Valley. The western portion of the project area is drained by a main ephemeral stream and several tributaries occurring in the area of the proposed leach pad west of the Centennial Pit. The main ephemeral stream from Little Valley flows east then northeast and joins an ephemeral stream from Upper Lisbon Valley. The nearest perennial stream is the Dolores River, located approximately 20 miles east of the project site. Surface water presently on the site is limited to that flowing from Lisbon and Huntley Springs, water intermittently ponded in the Centennial and GTO Pits, and two cattle ponds. Flow measurements in April 1994 revealed flow rates of approximately 1.2 gpm for the Lisbon Spring and 0.1 gpm for the Huntley Springs. Annual precipitation for Lisbon Valley is about 15 inches with most of that falling in the fall and winter months. Dissolved antimony slightly exceeded the primary standard in samples from Huntley Spring and the cattle pond near Sentinel Pit. Gross alpha exceeded standards in Lisbon Spring and gross beta was exceeded in all samples with the exception of that from Huntley Spring.

Water Monitoring Plan: A ground water monitoring plan will be conducted according to DEQ requirements and conditions. The DEQ draft Ground Water Quality Discharge Permit and Statement of Basis for this project has gone to the 30-day public comment period beginning December 16, 1996. Leak detection will be in place for the heap leach pad and ponds. A post-closure groundwater monitoring program will be instituted.

Ecology

Vegetation Type(s); Dominant Species: Pinyon-juniper zone (PJ): Shrubs are big sagebrush, antelope brush, Mormon tea, rabbitbrush, mountain mahogany, serviceberry, bitterbrush, and snakeweed. Forbs are cryptantha, milk vetch, desert paintbrush, and bladder pod. Grasses are wheat grass, indian ricegrass, and bluegrass. Isolated cactus are present on the drier slopes. Sagebrush zone (SB): sagebrush is dominant with the exception of some golden rabbitbrush in areas that have been disturbed. Some areas have an understory of cheatgrass and native grass. Grassland/rangeland zone (GR): predominantly sagebrush (or in some cases PJ). Some areas were chained during the 1960s and early 1970s and seeded with crested wheatgrass. Cheatgrass, blue grama, needle-and-thread, and Indian ricegrass are also growing in some of the crested wheatgrass seedings. Previous mining activity has intruded into the PJ and SB zones, and vegetation community composition reflects disturbance. Approximately 85 acres disturbed by previous mining activity and never reclaimed now have only a very sparse cover of golden rabbitbrush.

Percent Surrounding Vegetative Cover: Ranges from 2% in previously disturbed areas to 30% in previously undisturbed areas.

Wildlife Concerns: None. No threatened and endangered species have been identified in the project area, and no critical habitat for threatened and endangered species has been identified on the adjacent public lands.

Surface Facilities: A one-story building to include offices, locker and shower rooms, first aid room, lunch room, conference and training room; a laboratory building to include a wet bench area, fine bench area, coarse reject bench area, and bench area for jaw crusher; a two-story truck shop repair building to accommodate mine equipment and contain oil storage and dispensing tanks and equipment, overhead crane, antifreeze storage tank and dispensing equipment, wash bays, waste oil and drainage sump to contain spills within the truck shop area; a warehouse building will be housed within the same building as the truck shop; a bermed and lined fuel storage and dispensing station for diesel fuel and unleaded gasoline; a bermed, lined and fenced chemical use and storage area with signs to provide warnings of the potential hazards. Reagents

stored and used onsite will include sulfuric acid, an extractant, a diluent (kerosene), ferrous sulfate, cobalt sulfate and chlorine. Ammonium nitrate would be stored in silos or bins in a bermed area. Storage tanks for process water. All potable water will be provided by bottled water. Power will be provided by a suspended raptor-proof 69-kV powerline from the existing Hatch substation running east to Lisbon Valley. An ore stockpile and crushing area. A conveyor system for ore placement on the lined heap leach area. A solvent extraction electrowinning (SX-EW) facility. A double lined pregnant pond and raffinate pond with leak detection systems. A lined stormwater pond and emergency overflow pond.

Mining and Reclamation Plan Summary:

During Operations: Mining operations will be conducted in four pits Sentinel #1, Sentinel #2, Centennial, and GTO. Rock berms or fences would be installed to prevent public access to the pits. Dozers will be used to rip ore and waste in addition to drilling and blasting to fragment the rock. Blast holes would be drilled using a 10-inch rotary drill with ANFO as the explosive agent. Waste rock will be hauled from the open pits to the waste dumps using haul trucks and scrapers. Soils from the waste dump area would be salvaged for use in reclamation prior to dumping. Dumps would be constructed by a combination of end dumping and dozing the material over the side of the dump in 40 - 50 foot lifts while maintaining an overall outslope of 2.5h:1v. Haul roads would be installed inside and outside the pits, and among facilities to access the pits, waste dumps and the ore crushing facilities. Approximately 15,000 linear feet of haul roads would be constructed. Ore would be hauled to the crushing facilities located near the heap leach pad. Ore would be crushed to a size of 1 1/2 to 2 inches by a jaw crusher and secondary cone crusher. Crushed ore would be transferred to the heap leach pad by a series of conveyors within a lined conveyor corridor. Ore will be placed on the heap in three 36-foot high lifts using a radial stacker. The heap leach pad will include a system of synthetic and clay liners and a leak detection system. The heap leach pad will eventually cover 266 acres. A sulfuric acid solution would be applied to the ore using drip emitters or spray nozzles. Solutions which have percolated through the heap would be collected and piped to the pregnant pond. The pregnant solution is then run through the solvent extraction/electrowinning (SX/EW) plant. The SX circuit would consist of three mixer/settlers and associated storage tanks. The EW circuit would plate out the copper from the strong acidic electrolyte onto cathodes. The cathode copper would be removed from the cells and shipped off site for fabrication purposes.

After Operations: Pit walls and benches would not be revegetated. Pit benches would be allowed to fill with rubble from natural sloughing activities. Haul roads which accessed pit bottoms would be ripped, covered with soil and seeded. It is estimated that water could intermittently collect in each of the pits. The pit perimeters would be planted with indigenous tree species to partially screen the open pits. Waste rock dumps would be developed with benching to maintain an overall slope of 2.5:1. Some grading of waste dumps is required to break up the individual bench levels prior to the application of growth medium. The tops of the waste dumps would be ripped to a depth of about four feet and scarified to form a roughened seedbed surface. The surface would be contoured to encourage infiltration rather than ponding. The leached ore on the pad would be flushed with fresh water to reduce the chemical characteristics of the effluent to acceptable levels. Other treatments such as lime amendments may also be used to neutralize the heaps. Pumping activities would be performed to reduce the solution inventory by using high evaporation sprinklers. After the heap has been decommissioned, the heap slopes would be reduced from the operational slope of 2:1 to an overall slope of 2.5:1. The benches and top of the heap would be graded to establish positive drainage. The top and sides of the heap would be either covered with compacted soils or treated with commercially

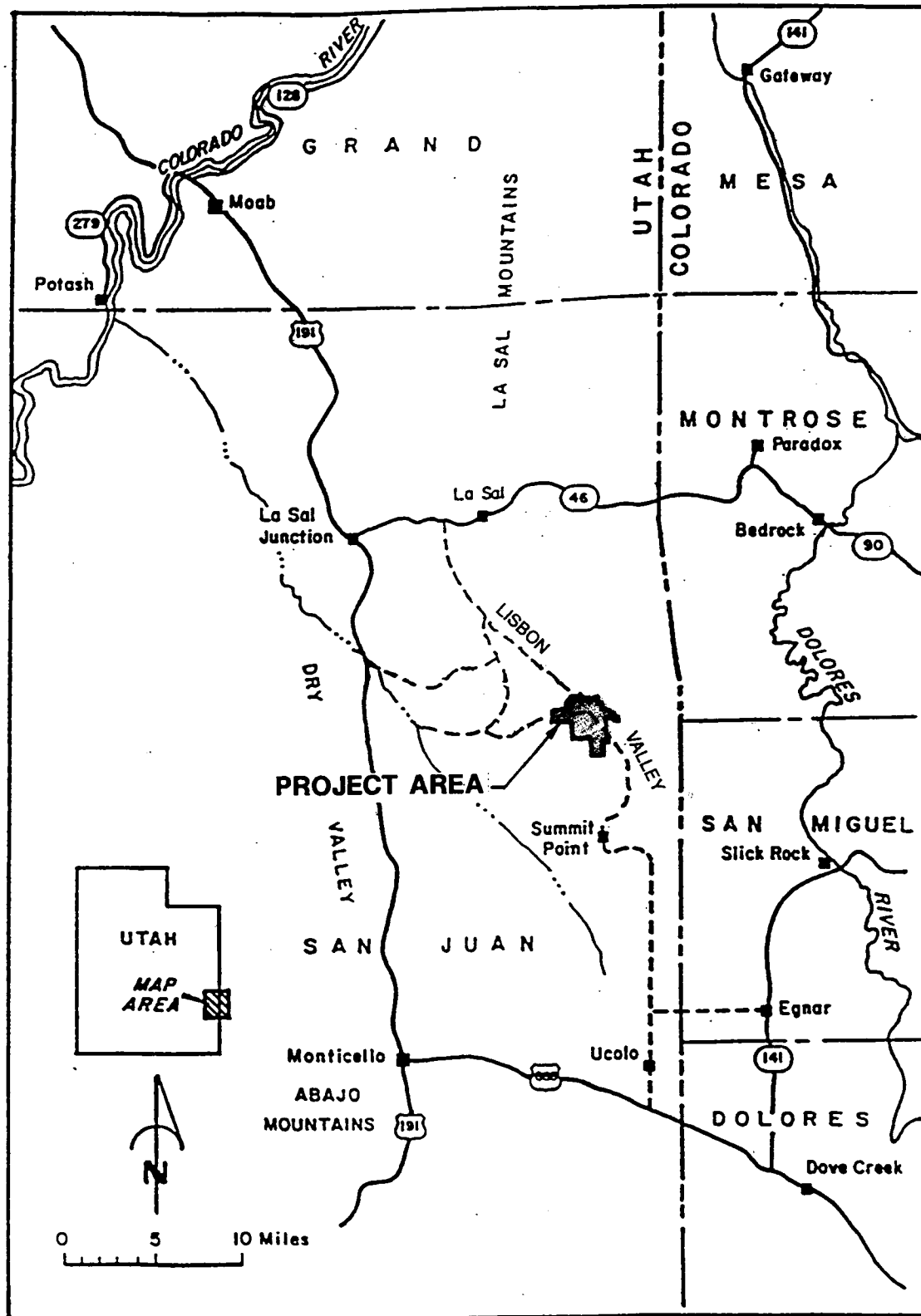
available products if needed. A worst case 12 inch clay layer has been proposed for bonding purposes. Waste rock would be placed on top of this prepared layer up to several feet in thickness to provide an adequate rooting zone. Plant growth medium would be spread on top of the waste rock cap and the area would be seeded. All exterior piping, retention and diversion structures would be removed. No perforation of the heap leach pad liner is planned. Solution ponds would be allowed to dry, and if necessary, the process solutions would be treated as dictated by results of the laboratory testing. Once the ponds are dry, the liners would be folded into the ponds and waste rock placed over them. The pond areas would be graded to achieve a positive drainage, covered with plant growth medium, seeded and fertilized as needed. All equipment at the project area would be removed. No chemical or electrical hazards would remain after closure. The poweline will remain after final reclamation for public purposes. All buildings and facilities would be dismantled and removed from the site or buried. Foundations would be removed and buried elsewhere on the site or buried in place. Facility areas would be contoured to create a natural appearance and to prevent erosion. Plant growth medium would be applied and the areas seeded and fertilized as needed. Roads and other facilities not deemed essential would be ripped, as necessary, to alleviate compaction, graded to route runoff, covered with plant growth medium, seeded and fertilized as indicated by test plot results. The site would be monitored for a minimum of two years following completion of all final reclamation activities.

Surety

Amount: \$1,863,967.50 (\$6,213,225 for 10-yr mine life)

Form: Surety Bond

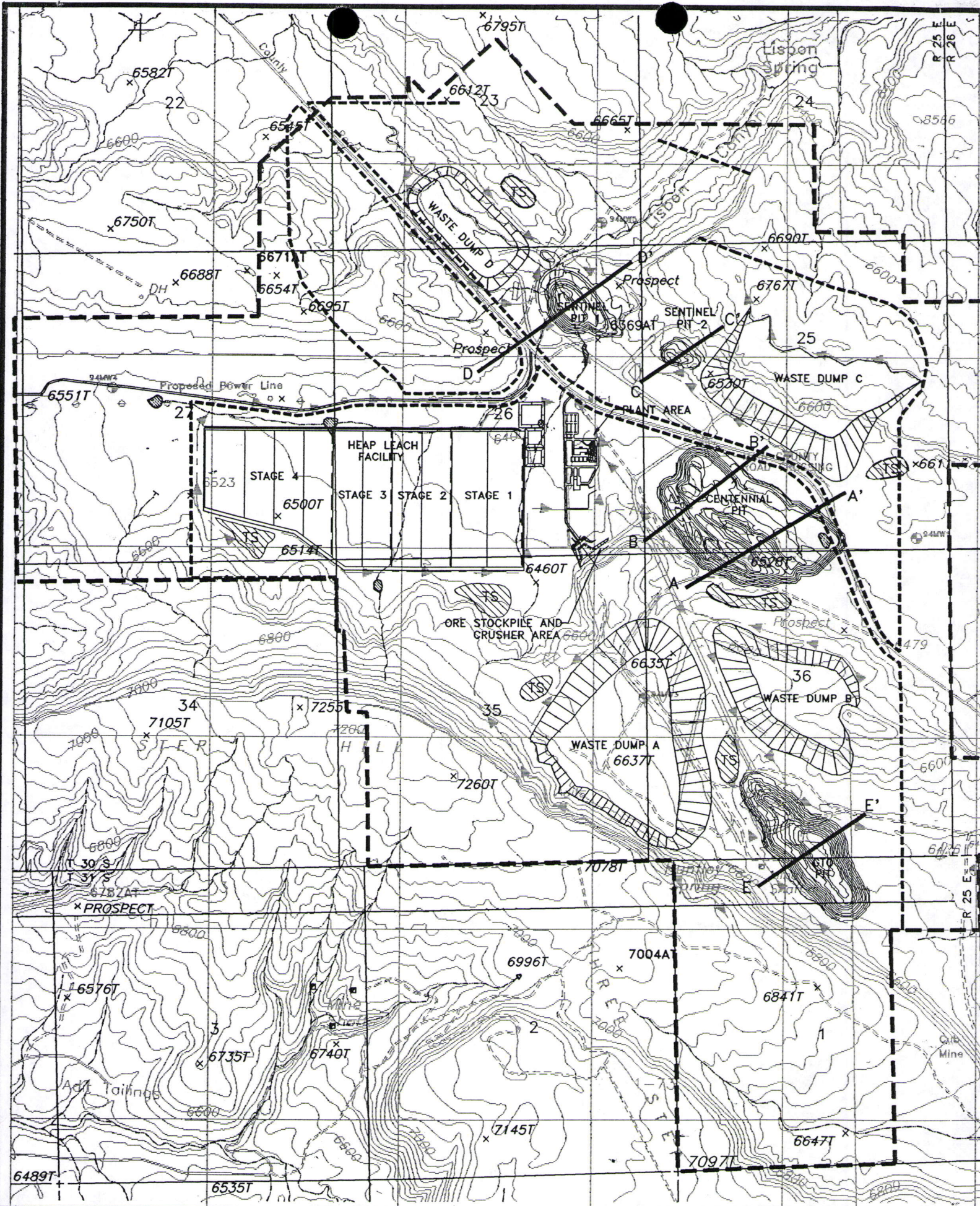
Renewable Term: 3 years or 314.4 acres



SOURCE: SUMMO, 1996

Job No. :	23996
Prepared by :	G.J.W.
Date :	1/24/95

LOCATION MAP
LISBON VALLEY AREA
SAN JUAN COUNTY, UTAH



SUMMO USA CORP.
M/037/088

FILENAME: RECC2.XLS			REV 4		THE WINTERS CO TUCSON, ARIZONA				10:45 AM					
PROJECT: SUMMO CORP., LISBON VALLEY COPPER					CAPITAL COST ESTIMATE									
DESCRIPTION: RECLAMATION COSTS														
DATE: 03-Jan-97														
DESCRIPTION					LABOR HR PER UNIT		UNIT	#REFI	RENTAL	EXTENDED COSTS		TOTAL		
RECLAMATION OF MISCELLANEOUS AREAS					QTY	UNIT		LABOR	EQUIPMENT	MATERIAL	LABOR	SUBTOTAL		
1	POND AREA--11 ACRES													
2	RAFFINATE POND--12 INCHES SOIL													
3	PLS POND--12 INCHES SOIL				4,852	CY						6,065		
4	WATER RUNOFF POND--12 INCHES SOIL				4,852	CY						6,065		
5	SEED 3 POND AREAS				8,229	CY						10,286		
6	TOTAL--POND AREA RECLAMATION				11	ACRE						1,937		
7														
8														
9	PLANT & CRUSHER AREA--25.5 ACRES											24,353		
10	APPLY 12 INCHES SOIL				41,080	CY						51,350		
11	SEED ENTIRE AREA				25.5	ACRE						4,438		
12	TOTAL--PLANT AREA RECLAMATION													
13														
14														
15	HAUL ROADS--40 ACRES													
16	SCARIFY				192,889	SY						38,578		
17	CONTOUR				64,296	CY						80,370		
18	APPLY 12 INCHES SOIL				67,511	CY						84,389		
19	SEED ENTIRE AREA				40	ACRE						6,944		
20	TOTAL--HAUL ROAD RECLAMATION													
21												210,281		
22	POWER LINE CORRIDOR--64 ACRES*													
23	*NOTE--POWER CO. HAS REQUESTED THE POWER				64	ACRE								
24	LINE REMAIN OPEN.													
25														
26														
27	RESEED SOIL STOCKPILE AREAS--40 ACRES													
28	RESEED 40 ACRES				40	AC						6,936		
29	TOTAL--RESEED SOIL STOCKPILE AREAS													
30														
31	FENCES & BERMS* AROUND OPEN PITS													
32	FENCE AROUND SENTINEL PIT 1				5,620	LF						16,972		
33	FENCE AROUND SENTINEL PIT 2				2,140	LF						6,463		
34	FENCE AROUND CENTENNIAL PIT				8,980	LF						27,120		
35	FENCE AROUND GTO PIT				7,410	LF						22,378		
36	TOTAL--PIT FENCES													
37	*NOTE--COST FOR BERMS IS NOT SHOWN, AS THESE WILL											72,933		
38	BE BUILT DURING PLANT CONSTRUCTION PHASE.													
39	FENCING MATERIAL WILL BE RECYCLED FROM THE													
40	LEACH PAD AREA.													
41														
42	SURFACE DRAINAGE DIVERSION DITCHES*													
43	LEACH PAD AREA				7,473	CY						9,341		
44	PLANT AREA				1,595	CY						1,993		
45	CRUSHER AREA				1,810	CY						2,263		
46	DUMP AREAS				13,668	CY						17,085		
47	TOTAL--DRAINAGE DIVERSION DITCHES													
48	*WORK IS FOR REMOVING DIVERSION SEDIMENT STRUCTURES.											30,682		
49														
50	TOTAL											\$400,970		
51	PROFIT								PROFIT @					
52	TOTAL INCLUDING PROFIT								0%			\$400,970		

3

THE WINTERS CO TUCSON, ARIZONA CAPITAL COST ESTIMATE										10:45 AM	
SUMMARY OF RECLAMATION COSTS FOR LISBON VALLEY											
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SUMMO MINERALS
ESTIMATED AREA CALCULATIONS
Revision 2

AREA	SURFACE AREA OF OBJECT (AUTOCAD) (SQ FT)	PLAN SURFACE AREA OF SIDE SLOPES (SQ FT)	SLOPE AREA FACTOR	ESTIMATED TRUE SLOPED AREA (SQ FT)	TOTAL RECLAIMABLE SURFACE (SQ FT)	DEPTH OF TOPSOIL COVER (FT)	TOTAL TOPSOIL NEEDED (CU FT)	TOTAL TOPSOIL NEEDED (CU YDS)
WASTE DUMP								
A	4,108,000	3,870,000	1.076	4,164,000	8,272,000	1	8,272,000	306,000
B	1,775,000	2,160,000	1.076	2,324,000	4,099,000	1	4,099,000	152,000
C	3,098,000	1,996,000	1.076	2,148,000	5,246,000	1	5,246,000	194,000
LEACH PAD	7,097,000	3,549,000	1.12	3,975,000	11,072,000	1	11,072,000	410,000
POND	BASE AREA							
A	222,186				178,000	1	178,000	7,000
B	131,000				97,000	1	97,000	4,000
C	131,000				97,000	1	97,000	4,000
TOPSOIL PILES	FOOT AREA							
A	146,000				146,000	1	146,000	5,000
B	252,000				252,000	1	252,000	9,000
BN	322,000				322,000	1	322,000	12,000
LSE	367,000				367,000	1	367,000	14,000
LSW	278,000				278,000	1	278,000	10,000
C	180,000				180,000	1	180,000	7,000
D	189,000				189,000	1	189,000	7,000
TOTAL	18,107,186	11,575,000		12,611,000	30,795,000		30,795,000	1,141,000

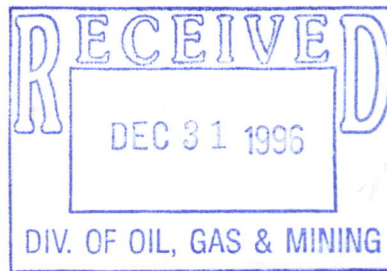
GOCHNOUR & ASSOCIATES, INC.

P.O. Box 3207
Englewood, CO 80155

Tel. (303) 770-7580
Fax. (303) 721-9298

December 30, 1996

Mr. Anthony Gallegos
State of Utah
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801



RE: Summo USA Corporation, Lisbon Valley Copper Project - Reclamation Contract and Proposed Reclamation Bond

Mr. Gallegos:

Summo USA Corporation (Summo) is please to submit the above referenced information to the Utah, Division of Oil, Gas, and Mining (Division), which will in turn be presented to the Board of Oil, Gas and Mining on January 22, 1997.

This letter includes as Attachments:

- An executed Reclamation Contract
- The proposed form and initial amount of Surety

Please note that initial reclamation bond amount is equal to 30% or three years of the proposed project. While Summo has calculated reclamation obligations for the current life of the proposed project, it is understood that activities beyond three years or 30 % of the total bond can not be initiated until additional satisfactory bonding is in place. Or, when reclamation of approved activities is completed to Division satisfaction.

This should satisfy all of the conditions and questions that the Division has requested of Summo. If there are additional questions or needs, please contact me at the listed letterhead number.

Sincerely,

A handwritten signature in cursive script that reads "Lee 'Pat' Gochnour".

Lee "Pat" Gochnour
Principal

Attachments (2)

cc: Mr. Robert Prescott - Summo USA Corporation